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**(54) SECURITY TICKET.**

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**Description****TECHNICAL FIELD:**

The present invention relates to a laminated security ticket comprising a carrier sheet of paper material and a face sheet of direct thermal paper. The invention further relates to a system for handling security tickets.

**BACKGROUND OF THE INVENTION:**

The illegal copying, or forgery, of valuable documents such as pre-sold tickets for events such as concerts and sports meetings is a growing problem which costs the organizers of these events an incalculable amount every year. Particularly with the advent of high resolution colour copying machines, even tickets with an intricate multi-coloured security pattern printed thereon are possible to reproduce very accurately.

In order to reduce the demands on ground personnel at stadiums and arenas, it is desirable if tickets can incorporate some form of machine-readable code so that entrance can only be granted to ticket-holders whose ticket includes the prerequisite code. By using different codes for different sections of the stadium or arena, entrance to various sections can be effectively controlled. In order to create different security levels, a flexible and easily adaptable printing technique is needed. As well as incorporating a machine-readable code, it is advantageous if the ticket also displays a visible security pattern so that a visible check of the ticket is possible.

One known type of security ticket is preferably of a laminate construction comprising a carrier sheet of card or paper and a sheet of face material of thermal paper. When a ticket is to be issued, relevant information such as the name of the event, date, time, seat number, etc. can be printed onto the face material simultaneously with a machine-readable code. The machine-readable code is normally of a bar code type which can be read by a scanner. Scanners are installed for example at entrances to arenas where the event for which the ticket is valid is being held. The ticket is inserted into a slot reader containing the scanner and, provided that the bar code information corresponds to information previously entered into the memory of the computer to which the scanner is connected, the holder of the ticket is admitted to the arena.

Such tickets are, however, relatively easy to copy since the bar code can be photocopied. Thus, the potential purchaser of such a ticket has no means of assuring that the ticket is in fact genuine and not a forgery.

5 A multilayer identification card is known from US-A-4 579 754 in which information in the form of patterns, letters, numbers and/or pictures is inscribed by means of a laser recorder in a laser transformable layer of the identification card which is made of plastic and is transparent in the visible spectral range.

**SUMMARY OF THE INVENTION:**

10 It is an object of the present invention to provide a laminated security ticket which is exceedingly difficult to copy.

15 This object is achieved according to the present invention by a laminated security ticket comprising a carrier sheet of paper material and a face sheet of direct thermal paper, the ticket being characterized in that said face sheet is sufficiently transparent to permit the carrier sheet to be seen therethrough.

20 It is a further object to provide a system suitable for handling such tickets.

25 This object is achieved according to the present invention by a system for handling security tickets comprising a supply of carrier sheets, a supply of transparent or semi-transparent face sheets, means for laminating the carrier sheets to the face sheets, hardware for thermal printing information on said face sheets, software to allow variation of the information printed on said face sheets and a programmable scanner for reading at least some of the information on the thus formed ticket.

**DETAILED DESCRIPTION:**

30 Since the security ticket according to the present invention is provided with a face sheet of direct thermal paper which is sufficiently transparent to allow the carrier sheet to be seen therethrough, information printed on the surface of the carrier sheet to which the face sheet is applied is legible. Thus, the ticket issuer can specify a particular design, security pattern or watermark for the carrier sheet for a particular event from the manufacturer of the carrier sheet and a visible check as to the authenticity of the tickets is easily attainable.

35 The carrier sheet may also be provided with a machine-readable code, for example a bar code, which can be read by a scanner. The markings on the carrier sheet, be they a security pattern, a machine-readable code or both, may be printed on either or both faces of the sheet.

40 In a preferred embodiment the carrier sheet is provided with a watermark in the form of a machine-readable bar code. The bar code is then readable through the transparent or semi-transparent face sheet. It is to be understood that a carrier

sheet comprising a water mark in the form of a machine-readable bar code may be manufactured and sold as a separate sheet.

The transparent or semi-transparent face sheet of the security ticket of the present invention may also be printed with a security pattern. In such a case, the carrier sheet may advantageously be provided with just a watermark since the light-transmitting properties of the face sheet will allow the watermark to be clearly visible when the ticket is held up to the light and viewed from the side remote from the face sheet.

A preferred security pattern, be it for the carrier sheet, the face sheet or both, is a so called Guilloche pattern.

The ticket issuer may be provided with an adaptable printing system for printing the face sheets. As well as printing information on the face sheet relating to the event for which the ticket is valid, a machine-readable code may also be printed. Since the printing system is adaptable by the ticket issuer, the issuer is not restricted to the use of standard bar codes, but instead is free to use different algorithms for the code for different events or for different sections of the arena or stadium in which the event is to take place.

In a preferred embodiment according to the present invention, the face sheet is a sheet of infrared readable thermal paper. Thus, the bar code which is printed on the face sheet is IR-readable, i.e. readable by an infrared scanner. With such a code, a "black window" formed from an infrared black ink can be preprinted on the face sheet. In this blackened window is then thermally printed a particular bar code by the ticket issuer. A major advantage with this type of bar code is that it is not readable in the visible light spectrum and so is not copyable using standard photocopying techniques.

The entrances to the stadium or arena in which the event for which the tickets have been produced is to take place are provided with programmable scanning means into which the relevant data concerning the codes used by the ticket issuer is entered. The scanning means includes those scanners which are necessary to read the machine-readable information on the tickets. For example, if the carrier sheet is provided with a visible bar code and the face sheet with an IR-readable code, both a visible light scanner and an IR scanner are provided in the scanner means.

A particular advantage with the present invention is that the transparent or semi-transparent face sheet allows the machine-readable information printed on the carrier sheet to be read from the same side as the information carried on the face sheet. Thus, the scanners in the scanning means need only be provided on one side.

From the above, it will be apparent that the security ticket according to the present invention can incorporate different levels of security. In a simple form, the ticket may comprise a carrier sheet provided with a watermark and/or preprinted security code and a transparent direct thermal face sheet. At an intermediate security level, machine-readable codes of standard type may be incorporated on the carrier and face sheet. At a high security level, the carrier sheet may be provided with a security pattern, whilst the face sheet may be of infrared-readable thermal paper preprinted with a blackened window for an IR-readable code of non-standard type.

The above-described embodiments are intended to illustrate the present invention and are mentioned by way of example only. Naturally, other combinations of the security features will be apparent to the skilled man. Thus, the present invention may be varied within the scope of the claims.

#### Claims

1. A laminated security ticket comprising a carrier sheet of paper material and a face sheet of direct thermal paper, characterized in that said face sheet is sufficiently transparent to permit the carrier sheet to be seen therethrough.
2. A laminated security ticket according to claim 1, characterized in that said carrier sheet is provided with a watermark.
3. A laminated security ticket according to claim 1 or 2, characterized in that said carrier sheet is preprinted with a security pattern or machine-readable code on its side to which the face sheet is to be laminated before lamination of the face sheet takes place.
4. A laminated security ticket according to any of claims 1 to 3, characterized in that a security pattern or machine-readable code is printed on said face sheet.
5. A laminated security ticket according to claim 3 or 4, characterized in that said security pattern is a Guilloche pattern.
6. A laminated security ticket according to any of claims 1 to 5, characterized in that said face sheet is a sheet of infrared readable thermal paper.
7. A laminated security ticket according to claim 6, characterized in that said face sheet is provided with a blackened window in which an

IR-readable code is thermally printed.

8. A laminated security ticket according to claim 3, 4 or 7, **characterized in** that said machine-readable code is a non-standard bar code.
9. A laminated security ticket according to any of the preceding claims, **characterized in** that said carrier sheet is provided with a watermark in the form of a bar code which can be read through the face sheet.
10. A system for handling security tickets comprising a supply of carrier sheets, a supply of transparent or semi-transparent face sheets, means for laminating the face sheets to the carrier sheets, hardware for thermal printing information on said face sheets, software to allow variation of the information printed on said face sheets and a programmable scanner means for reading at least some of the information on the thus formed ticket.
11. A system for handling security tickets according to claim 10, **characterized in** that the software is adapted to generate non-standard bar codes.
12. A system for handling security tickets according to claim 10 or 11, **characterized in** that the transparent or semi-transparent face sheets are sheets of infrared readable thermal paper.

#### Patentansprüche

1. Geschichtete Sicherheitskarte mit einem Trägerblatt aus Papiermaterial und einem Frontblatt aus Direkt-Thermopapier, **dadurch gekennzeichnet**, daß das Frontblatt ausreichend transparent für die Durchsichtbarkeit des Trägerblatts ist.
2. Geschichtete Sicherheitskarte nach Anspruch 1, **dadurch gekennzeichnet**, daß das Trägerblatt mit einem Wasserzeichen versehen ist.
3. Geschichtete Sicherheitskarte nach Anspruch 1 oder 2, **dadurch gekennzeichnet**, daß das Trägerblatt auf seiner Seite, auf welche das Frontblatt aufzuschichten ist, vor der Aufschichtung des Frontblattes mit einem Sicherheitsmuster oder einem maschinenlesbaren Code vorbedruckt ist.
4. Geschichtete Sicherheitskarte nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet**, daß auf das Frontblatt ein Sicherheitsmuster oder ein maschinenlesbarer Code gedruckt ist.
5. Geschichtete Sicherheitskarte nach Anspruch 3 oder 4, **dadurch gekennzeichnet**, daß das Sicherheitsmuster ein Guilloche-Muster ist.
6. Geschichtete Sicherheitskarte nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet**, daß das Frontblatt ein Blatt von infrarot-lesbarem Thermopapier ist.
7. Geschichtete Sicherheitskarte nach Anspruch 6, **dadurch gekennzeichnet**, daß das Frontblatt mit einem geschwärzten Fenster versehen ist, in welchem ein IR-lesbarer Code thermisch gedruckt ist.
8. Geschichtete Sicherheitskarte nach Anspruch 3, 4 oder 7, **dadurch gekennzeichnet**, daß der maschinenlesbare Code ein Nichtstandard-Strichcode ist.
9. Geschichtete Sicherheitskarte nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet**, daß das Trägerblatt mit einem Wasserzeichen in Form eines Strichcodes versehen ist, welches durch das Frontblatt lesbar ist.
10. System zur Handhabung von Sicherheitskarten mit einer Zuführung von Trägerblättern, einer Zuführung von transparenten oder halbtransparenten Frontblättern, einer Vorrichtung zum Aufschichten der Frontblätter auf die Trägerblätter, Hardware zum thermischen Drucken von Information auf die Frontblätter, Software, durch die eine auf die Frontblätter gedruckte Information variierbar ist, und eine programmierbare Abtastvorrichtung zum Lesen zumindest einiger der Informationen auf der so gebildeten Karte.
11. System zur Handhabung von Sicherheitskarten nach Anspruch 10, **dadurch gekennzeichnet**, daß durch die Software Nichtstandard-Strichcodes erzeugbar sind.
12. System zur Handhabung von Sicherheitskarten nach Anspruch 10 oder 11, **dadurch gekennzeichnet**, daß die transparenten oder halbtransparenten Frontblätter Blätter von infrarot-lesbarem Thermopapier sind.

#### Revendications

1. Ticket de sécurité stratifié, comprenant une feuille de support en papier et une feuille de revêtement superficiel en papier thermique direct, caractérisé en ce que ladite feuille de revêtement superficiel est suffisamment trans-

parente pour permettre que la feuille de support soit vue à travers elle.

2. Ticket de sécurité stratifié selon la revendication 1, caractérisé en ce que ladite feuille de support est dotée d'un filigrane. 5

3. Ticket de sécurité stratifié selon la revendication 1 ou 2, caractérisé en ce que ladite feuille de support est préimprimée au moyen d'un dessin de sécurité ou d'un code lisible en machine, du côté de celle-ci où la feuille de revêtement superficiel doit être fixée pour la stratification, avant que la stratification ne soit réalisée. 10

4. Ticket de sécurité stratifié selon l'une quelconque des revendications 1 à 3, caractérisé en ce qu'un dessin de sécurité ou un code lisible en machine est imprimé sur ladite feuille de revêtement superficiel. 15

5. Ticket de sécurité stratifié selon la revendication 3 ou 4, caractérisé en ce que ledit dessin de sécurité est un dessin en guilloché. 20

6. Ticket de sécurité stratifié selon l'une quelconque des revendications 1 à 5, caractérisé en ce que ladite feuille de revêtement superficiel est une feuille en papier thermique lisible en infrarouge. 25

7. Ticket de sécurité stratifié selon la revendication 6, caractérisé en ce que ladite feuille de revêtement superficiel est dotée d'une fenêtre noircie dans laquelle un code lisible en infrarouge est imprimé thermiquement. 30

8. Ticket de sécurité stratifié selon la revendication 3, 4 ou 7, caractérisé en ce que ledit code lisible en machine est un code à barres non normalisé. 35

9. Ticket de sécurité stratifié selon l'une quelconque des revendications précédentes, caractérisé en ce que ladite feuille de support est dotée d'un filigrane se présentant sous la forme d'un code à barres qui peut être lu à travers la feuille de revêtement superficiel. 40

10. Système de mise en oeuvre de tickets de sécurité, comprenant une alimentation en feuilles de support, une alimentation en feuilles de revêtement superficiel transparentes ou semi-transparentes, un moyen servant à fixer de manière stratifiée les feuilles de revêtement superficiel aux feuilles de support, un équipement matériel destiné à effectuer l'impression 45

thermique d'informations sur lesdites feuilles de revêtement superficiel, un logiciel qui permet de changer les informations imprimées sur lesdites feuilles de revêtement superficiel, et un moyen analyseur programmable servant à lire au moins certaines des informations présentes sur le ticket ainsi formé. 50

11. Système de mise en oeuvre de tickets de sécurité selon la revendications 10, caractérisé en ce que le logiciel est conçu pour produire des codes à barres non normalisés. 55

12. Système de mise en oeuvre de tickets de sécurité selon la revendications 10 ou 11, caractérisé en ce que les feuilles de revêtement superficiel transparentes ou semi-transparentes sont des feuilles en papier thermique lisible en infrarouge.

